

**EMERGENCY ALERT SYSTEMS**  
**SPECIFICATION**  
**BACKGROUND OF THE INVENTION**

This application claims the benefit of U.S. Provisional Patent Application No. 60/394,359, filed on 07/08/2002.

This invention relates generally to emergency alert systems and particularly to emergency alert systems for use with assistance dogs.

The emergency alert systems of the invention essentially comprise modified two-way radio systems wherein a signal activation means is installed in one of the radio apparatus. The signal activation means may include several forms including a toggle member attached to a flexible cord which when pulled from the radio apparatus activates the transmitting radio apparatus to thereby alert the second or receiver radio apparatus. Once activated communication may take place between the two radio apparatus.

Two-way radio communication assemblies are known to transmit signals of sound and code through space via electromagnetic waves. Each radio set may have a receiver and a transmitter to generate and amplify a radio frequency carrier signal, modulate the carrier signal with intelligence and feed the modulated carrier signal to an antenna for radiation into space as electromagnetic waves. The receiver portion of the radio set demodulates the signal and thereby provides an audio transmission, for example. The radio frequency spectrum is the entire range of frequencies in which radio waves can be produced and each two-way radio assembly has a radio transmitter and radio receiver which are used together for two-way communication at a specified frequency within the radio frequency spectrum.

The emergency alert systems of the invention permit a user, i.e., a disabled person, to contact a second party capable of coming to the aid of the user. The alert systems are provided for individuals seeking greater independence, privacy and self-

autonomy. For example, children, the elderly, those with disabilities and others may greatly benefit from the use of the alert systems of the invention. In addition to the application of the alert systems of the invention with these individuals, the systems may also be used by emergency personnel, for example. A long unfelt need is met by the alert systems of the present invention.

### **SUMMARY OF THE INVENTION**

The emergency alert systems comprise a transmitting unit, a receiver unit and means to activate the transmitting unit. The transmitting and receiver units may be comprised of a two-way radio system such as a two-way radio system operating on FM frequency, for example. In one embodiment, such systems may include an activating means which causes one radio to send a signal to the second radio. Training manuals and instructional videos may further be provided to train assistance dogs for activating and operating the transmitting unit and how to perform and behave in combination with the emergency alert systems, for example.

Activation means may include a jack receptacle incorporated into the body and circuitry of the transmitting unit and which cooperates with a jack having a flexible toggle device for grasping by a trained service dog. The dog bites the toggle device and removes the jack from the receptacle to thereby activate a signal for transmission to the receiving unit. Once alerted, communication may ensue between the two radio apparatus.

The invention relates to alert systems for medical emergencies, for example. The emergency alert systems of the invention have various embodiments designed for specific purposes. The alert systems include a transmitting unit, a receiver unit and various

activation means for the units. Modified, two-way radio units may be utilized in the alert system. Further, proximity transmitting means may be incorporated into the systems whereby the transmitting and receiver units cooperate therewith for specific emergency and alert purposes.

An object of the alert assembly is to aid those persons living with seizure disorders who may often need assistance, but do not necessarily need EMS services. With use of the assemblies of the invention the need for EMS is determined by the holder of the receiving unit. The assemblies are designed for use with assistance dogs for persons with disabilities, particularly those with seizure conditions.

These and other benefits of this invention will become clear from the following description by reference to the drawings.

#### **DESCRIPTION OF THE DRAWINGS**

**FIGURE 1** shows an embodiment of the emergency alert system of the invention and showing the transmitter and receiver apparatus;

**FIGURE 2** shows the emergency alert system and shows the activation of the transmitter apparatus of **FIGURE 1**;

**FIGURE 3** shows the activation assembly of the emergency alert system of **FIGURE 1**;

**FIGURE 4** is another embodiment of the emergency alert system;

**FIGURE 5** shows the emergency alert system of **FIGURE 4** in a state of activation;

**FIGURE 6** is another embodiment of the emergency alert system;

**FIGURE 7** shows the emergency alert system of **FIGURE 6** in a state of

activation;

**FIGURE 8** is a top plan view of a circuit board utilized in the transmitter apparatus; and

**FIGURE 9** is a schematic showing the modified electronic circuit of the transmitter apparatus.

### **DESCRIPTION OF THE PREFERRED EMBODIMENTS**

The present invention relates generally to emergency alert systems and particularly to emergency alert systems for use with assistance dogs.

Referring to **Figure 1**, the alert system embodiment 10 is shown to comprise the use of a modified two-way radio system 10. The alert system 10 includes a transmitting unit or apparatus 11 and a receiver unit or apparatus 12. The transmitting unit 11 is shown to have a body 13, with an antenna 14, a talk button 15, a microphone 16, a speaker 17 and a signal activation means 20. The transmitting unit 11 may further have a visual display 19, a reset button 18 and a channel lock button 25. The receiving unit 12 is shown to have a body 30 with an antenna 31, a call or talk button 32, a microphone 33 and a speaker 34. The transmission unit 12 may further have a reset button 35, a visual display 36 and a channel lock button 25.

The emergency alert systems of the invention may comprise a modified two-way radio system and wherein a signal activation means is provided in one of the radio apparatus. The signal activation means include several embodiments including a flexible toggle member which, when pulled from the radio apparatus activates the transmitting radio apparatus to thereby alert a second radio or receiver apparatus. Once activated

communication may take place between the two radio apparatus.

The use of the channel lock button 25 has been found useful in the alert systems 10 so as to minimize any time delay between the transmitter unit 11 and the receiving unit 12 in that the units do not proceed through the auto scan operation to locate a free channel.

Referring to **Figures 2 and 3**, the activation means 20 of the transmitting unit 11 is shown to comprise a jack 21, such as a phono type plug 20 which is inserted into the jack terminal 22 on body 13 and connected to the circuitry within the transmitter body 13. The phono type plug 21 is shown to have a connector loop 23 to which a rip cord 24 comprising an approximately five to six inch flexible cotton rope or cord 24 is connected, for example. Service dogs are trained to grab and pull on cord 24 based upon the action of the wearer to whom the transmitting apparatus is connected by means of a belt clip 37, for example. The trained assistance dog can pull the cord or rope 24, for example, thus pulling the jack 21 from the transmitting unit 11. The flexible connector loop 23 may be a nylon fish line, for example, whereas the toggle cord 24 is preferably ½ inch diameter cotton rope approximately 5 inches in length. The use of a length of rope provides a suitable target for service dogs.

The phono plug 21, when inserted into the unit 11, permits the two-way radio to function normally. An FM radio such as a Remington® FRS Radio [model #RM-60DC] manufactured by TEKK Inc., for example, may be modified by the addition of a small phono type jack 20 and jack terminal 21 to the side of the transmitting unit body 13. The two-way radio apparatus may be analog or digital. Charging units (not shown) are also provided with the transmitting unit 11 and the receiving unit 12 for battery recharging

purposes, as is known.

The jack 21 is frictionally held in jack terminal 22. Alternatively, this switch structure may be magnetic in operation whereby the jack is held to terminal 22 magnetically. The latter structure may be preferred where frequent alert uses are required. Alternatively, several jacks 21 with attached cord or rope portions 24 may be provided. Although the jack terminal 22 is shown positioned on the side of the transmitter body 13, the jack terminal 22 may be positioned on other portions of the body 13, i.e., on the bottom thereof. However, a position on the side of body 13 has been found preferred for use by service dogs.

When the rip-cord 24 is pulled from the transmitter unit 11, the transmitter unit 11 emits an alarm sound for a predetermined time period, i.e., a few seconds. Following the alarm the unit 11 is left with an "open mic". This allows the individual with the receiver unit 12 to hear a distress call, dog barking, or the individual speaking. Depending upon the circuitry of the radio units 11 and 12, the receiver 12 may or may not have the capability of communicating back to the transmitting unit 11 once the rip-cord 24 is pulled. Preferably the receiver 12, upon activating the call button 32 (PTT), will have the capability of shutting off the microphone on the transmitter unit 11. By doing so the transmitter 11 would become the receiver and the receiver would become the transmitter, however, would do so only for the period of time that the call or "push to talk" button 32 (PTT) is depressed.

Referring to **Figure 4**, another embodiment of the alert system 10 is shown and which operates in a manner similar to the embodiment of **Figures 1 and 2**. The transmission unit 11 is shown having a mercury type switch 26 with a movable

conductive member 38 to activate the transmitting unit 11 for operation. The disabled individual may wear the transmitting unit 11 by means of a belt clip 37, for example. This transmitting unit 11 will be activated by the disabled person when assuming a horizontal position, i.e., when falling down. Should the disabled person remain horizontal (indicating a seizure or fall) for more than a pre-determined time period, i.e., 10 seconds, the transmitting unit 11 will be activated by the conductive member 38 and will perform in the same manner as the previously described embodiment. This transmitting unit 11 may also be used with police, fireman and other emergency personnel as a safety tool. For the latter application, a by-pass switch may be added for situations when individuals may be working in a horizontal position for an extended period of time. For this embodiment a sounding alert system may be employed, which is known and presently used by firefighters.

Referring to **Figures 6 and 7**, another embodiment of the alert system 10 is shown. This embodiment is shown to operate by means of a proximity type switch. The system is constructed and operates in a similar manner to an invisible fence system, as used by dog owners, for example. The elder, child or disabled individual wears transmitter unit 11. When the individual strays more than a predetermined distance, i.e., outside the perimeter range 28, or a distance from location 45, where receiver 12 is located, for example, the alarm will sound and the units will perform in the same manner as the above described embodiment. The call activation means 20 is shown to have a clip 44 which may be used for connection to a wheelchair, for example, so that the falling by the user from the wheelchair would activate the transmitting unit 11. The talk-back feature is important and may be used with animals or humans. Disabilities that limit

cognitive function such as mental retardation and Alzheimers disease could be served very well using this embodiment. A soft plastic pendant 23 is shown connected to cord 24. The latter design is specifically constructed for use with an assistance dog. The pendant 43 may be a soft plastic device utilized for instructional or promotional purposes.

As shown in **Figures 5, 6 and 7**, the transmitter 11 is shown to have various activation means including a rip-cord 20, a mercury type switch 38 for activating the transmitter as well as the activation means when moved outside of the proximity range 28 of the proximity transmitter 45.

**Figure 8** is a top plan view of a circuit board 39 showing connections 40 (ground) and 41 for the phono type jack receptacle 22 in body 13 of transmitter apparatus 11. **Figure 9** is a circuit diagram 42 also showing the connection of the jack receptacle 22 into the electronic circuitry of the FM radio transmitter 11. The jack terminal 22 connection is shown connected to the call button activation circuitry of the radio apparatus.

The purpose of the various alert system embodiments of this invention is to increase the autonomy and independence by use of these monitoring systems. The holder or wearer of the transmitting unit 11 can activate the system by pulling a cord or rope 24 or by falling to a prone position for a period longer than 10-15 seconds, for example. The rip-cord device 24 is intended for use by assistance dogs trained to pull the cord 24, thus activating the unit 11. Once activated the transmitting unit sends an alert tone to the second (receiving) unit and leaves an open microphone. Once "alerted" the second individual will check on the status of the individual holding the first unit 11. Alternatively, the rip-cord 24 may be attached to both a wheelchair, i.e., by clip 44 and to



the person, i.e., via clip 37, in the wheelchair to thereby alert the receiving unit 12 should the person leave or fall from the chair.

The embodiments of the invention may include the addition of a locating system, i.e., by utilizing a small radar-like screen by which the receiving unit can locate the transmitting unit. Unlike more advanced technologies this system would have a relatively small range, perhaps up to two miles.

As many changes are possible to the embodiments of this invention, utilizing the teachings thereof, the description above and the accompanying drawings should be interpreted in the illustrative and not in the limited sense.